

### **REMARKS**

This is in response to the Office Action mailed on January 30, 2006, and the references cited therewith.

Claims 1, 6, and 12 are amended, no claims are canceled, and no claims are added; as a result, claims 1-20 remain pending in this application.

#### **Telephonic Interview with Examiner**

The Applicant thanks the Examiner for the courtesy of the telephonic interview between the Examiner and the Applicant's representatives Bradley Forrest and David D'Zurilla. A summary of that interview is being filed with the Patent Office.

#### **§101 Rejection of the Claims**

Claims 1-20 were rejected under 35 USC § 101 because the Office Action contends that the claimed invention is directed to non-statutory subject matter. The Applicant respectfully traverses this rejection.

However, notwithstanding this traversal, and in order to further the prosecution of this application, the Applicant has amended independent claims 1, 6, and 12 to recite that the claimed method, machine-accessible medium, and process are related to solving a scheduling problem in a particular business operation. There is ample support for this amendment in the specification as originally filed at least in paragraph 13, where it is disclosed that a business analyst may be interested in determining if enough product can be made in time to fill an order, and in paragraph 16 in which it states that operations problems may be encountered in industries as diverse as banking, education, forestry, petroleum, and trucking.

In further support of this amendment and the Applicant's belief in the patentability of the claims, the Applicant directs the Office's attention to the background of the present application, where it sets forth the real world environment in which the claimed invention operates. It describes that operators of plants are faced with many different types of decisions as to what to make when to satisfy customer demand and optimize profits. It sets forth a real world operations problem of current methods being unable to solve planning and scheduling problems within a

reasonable time, and if they do provide a solution, it may be a local maximum, and not the best or optimal solution. Still further, the solution may not even be feasible.

It should also be noted that operators of manufacturing plants are intimately familiar with the variables and constraints associated with the operations of their plants, and are well able to set up quadratic equations to address such variables and constraints. Still further, each plant likely has different sets of variables and constraints, and the identification and selection of such are not a part of the invention. As preferred by the Patent Office, well known aspects are preferably not described in detail.

The Office Action states that while the claim recites the solution is a schedule for a manufacturing process, the Office Action contends that the claims do not clarify how the mathematical operations are specifically adapted to yield a specific, substantial or credible result in relation to the schedule for operating the manufacturing process. This statement is respectfully traversed. Claim 1 specifically sets forth how the equations are solved by applying a bound propagation process, a local linear bounding process, a local linearization process, and a global subdivision search. Thus, not only does it specify how the equations are solved, it provides the additional utility of determining whether the solution is optimal, feasible or infeasible.

The Applicant further respectfully submits that the utility requirement does not require that the specific, substantial and credible utility be recited in the claims. MPEP § 2107 II. Additionally, there is no requirement that any mathematical operations recited in a claim be adapted to achieve a specific, substantial or credible result. It is the claims as a whole which must accomplish such a result. Clearly, a schedule for a plant is such a result.

The Applicant respectfully submits that the claims describe whether a solution to a scheduling problem of a particular business operation is optimal, feasible, or infeasible. As such, it is believed to overcome the rejection under 35 U.S.C. § 101. Just as the calculation of a share price in *State Street*<sup>1</sup> was a useful, concrete, and tangible result, the calculation of a solution to a scheduling problem in a particular business operation that can be applied to a multitude of businesses and industries, and the determination of whether that solution is optimal, feasible, or

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<sup>1</sup> *State Street Bank & Trust Co. v. Signature Financial Group, Inc.*, 149, F.3d, 1368, 1373, 47 USPQ2d 1596, 1601-02 (Fed. Cir. 1998).

infeasible, is a useful, concrete, and tangible result. In fact, it is a useful, concrete, and tangible result that is crucial to making decisions in operating a plant to produce things, such as ice cream, as described in the background section. Consequently, the Applicant respectfully submits that the rejection under 35 U.S.C. §101 should be withdrawn.

§112 Rejection of the Claims

Claims 1-20 were rejected under 35 USC § 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. The Applicant respectfully traverses this rejection.

As explained in detail in the written description of the present application, in an embodiment, the variables recited in the claims may represent qualities, quantities, timing, and the like. Moreover, specific examples of one or more embodiments are provided in excruciating detail in the specification.<sup>2</sup> The Applicant respectfully submits that the subject matter of the claims are most assuredly reproducible and repeatable for any particular business or manufacturing process. The Applicant further respectfully submits that one of skill in the art of business and/or operations management would, without undue experimentation, be able to select pertinent variables for their processes and apply them to the subject matter as disclosed in the present application.

The Applicant therefore respectfully requests the withdrawal of the rejection of the claims under 35 USC § 112, first paragraph.

Claims 1-20 were rejected under 35 USC § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which Applicant regards as the invention. The Applicant respectfully traverses this rejection.

The Office Action states that the variables, relationships, and constraints of claims 1-20 are not explicitly defined. The Applicant respectfully disagrees. The specification states that in an embodiment, the variables may represent qualities, quantities, timing, and the like. The Applicant respectfully submits that a person of skill in business operations and/or manufacturing operations would be able to identify the variables that are pertinent to his or her industry (such as

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<sup>2</sup> Specification, pp. 13-42.

the quantity of oil in a tank in an oil refinery), and further would be able to use such variables and values in connection with the present disclosure.

§102 Rejection of the Claims

Claims 1-20 were rejected under 35 USC § 102(b) as being clearly anticipated by Hillier et al. (Introduction to Operations Research (6<sup>th</sup> ed)). The Applicant respectfully traverses this rejection.

Anticipation requires the disclosure in a single prior art reference of each element of the claim under consideration. *Verdegaal Bros. v. Union Oil Co. of California*, 814 F.2d 628, 631, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987). It is not enough, however, that the prior art reference discloses all the claimed elements in isolation. Rather, "[a]nticipation requires the presence in a single prior reference disclosure of each and every element of the claimed invention, *arranged as in the claim.*" *Lindemann Maschinenfabrik GmbH v. American Hoist & Derrick Co.*, 730 F.2d 1452, 221 USPQ 481, 485 (Fed. Cir. 1984) (citing *Connell v. Sears, Roebuck & Co.*, 722 F.2d 1542, 220 USPQ 193 (Fed. Cir. 1983)) (*emphasis added*). "The identical invention must be shown in as complete detail as is contained in the ... claim." *Richardson v. Suzuki Motor Co.*, 868 F.2d 1226, 1236, 9 USPQ2d 1913, 1920 (Fed. Cir. 1989); MPEP § 2131.

Moreover, whenever a claim is rejected, the ground of the rejection should be fully and clearly stated. Furthermore, an omnibus rejection of the claims is not informative.<sup>3</sup>

In rejecting the claims under 35 U.S.C. § 102(b), the Office Action cites the entirety of Hillier et al., and in particular the table of contents, the index, and chapters 2, 3, and 13. The Applicant respectfully submits that this rejection does not state the grounds thereof fully and clearly, and furthermore amounts to an omnibus rejection. The Examiner at least has not identified where the last element in claim 1 is taught in the cited reference. Therefore, a *prima facie* case of anticipation has not been established, and the Applicant respectfully submits that the rejection under 35 U.S.C. § 102(b) should be withdrawn.

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<sup>3</sup> MPEP § 707.07(d).

Conclusion

Applicant respectfully submits that the claims are in condition for allowance, and notification to that effect is earnestly requested. The Examiner is invited to telephone Applicant's attorney at (612) 371-2140 to facilitate prosecution of this application.

If necessary, please charge any additional fees or credit overpayment to Deposit Account No. 19-0743.

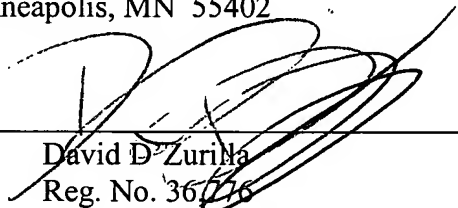
Respectfully submitted,

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Date April 18, 2006

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CERTIFICATE UNDER 37 CFR 1.8: The undersigned hereby certifies that this correspondence is being deposited with the United States Postal Service with sufficient postage as first class mail, in an envelope addressed to: Commissioner of Patents, P.O. Box 1450, Alexandria, VA 22313-1450, on this 28<sup>th</sup> day of April, 2006.

Dawn M. Poole

Name

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Signature